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BHCTP Monthly Discharge Monitoring Report

Month:	February-18		
Facility:	Central Treatment Plant		
Location:	Bunker Hill Superfund Site		
Contract Number:	W912DW-16-C-0012	Amec Foster Wheeler	
Total Flow For The Month From 006 Outfall:		61,451,600	gallons
Sludge pumping to CIA sludge pond:		1,518,000	gallons
Total Flow From Kellogg Tunnel:		59,644,830	gallons
Percent of Influent Successfully Treated:		100.0%	

12 sample days * 6 parameters (Pb, Cd, Zn, Mn, TSS & pH) = 72 potential exceedances
72 - 0 exceedances = 72 72/72 = 100%

Results of Sampling Efforts:

All sampling has been performed in accordance with specifications and the Sampling and Analysis Plan.

Performance Evaluation (PE) sampling was not performed for this reporting period.

Trip blank and rinsate sampling was performed, with the results being reported on the 'PTM-004,RB,TB' page of this DMR.

Highlights of Plant Maintenance and/or Plant Optimization:

02-01-18 Performed monthly fire extinguisher inspection. All CTP fire extinguishers are fully charged and in good working condition at this time.

02-01-18 Performed monthly pump and motor inspection. All CTP pumps and motors are in good condition at this time.

02-06-18 Performed AMD line pigging preparation activity. Set up the confined space safety rail at the mine yard. Pumped rain water out of the main line access vault. Mobilized the Godwin pump to the pigging location.

02-07-18 Performed confined space evaluation and safety meeting to discuss all hazards associated with the AMD main line pigging event. Performed the AMD main line pigging event from the Bunker Hill Mine yard to the lined storage pond. Pigging event was performed with no issues. A complete pigging report was submitted on February 8, 2018 along with the BHCTP daily QC report.

02-08-18 Performed the quarterly AMD direct feed line cleaning event. The AMD pipeline cleaning report was submitted with the BHCTP daily QC report 02-08-18.

02-12-18 Performed six month rotation on the lime silo, slaker and lime injection pumps. Lime silo B was placed into service, lime silo A was placed into standby mode. Slaker B was placed into service, slaker A was placed into standby mode. Lime injection pump #2 placed into service, lime injection pump #1 placed into standby mode.

02-13-18 Operators performed the monthly no load emergency generator run test. The emergency generator operated for one half hour as programmed with no issues or errors to report.

02-16-18 Operators responded to an after hours auto-dialer alarm caused by low lime feed rate. The lime feed rate alarm was caused by the after hours mine pool pump activation.

02-17-18 Operators responded to an auto-dialer alarm caused by a power outage. CTP pump and motors would not start. Electrician was called in and identified the Avista power to the CTP was in over voltage mode. CTP operators activated the emergency generator. The emergency generator operated the CTP continuously for seventeen hours. Operators were required to perform periodic inspections during the emergency generator operation as the auto-dialer

is continuously activated during the generator operations.

02-18-18 Operators continued periodic CTP inspections during the emergency generator operations. 09:40 operators placed the CTP back on Avista power and placed the generator back into standby mode.
The electrician discussed the power issue with Avista representatives and it was determined the Avista power serge was caused by an Avista sub station voltage regulator failure.

02-26-18 Operators responded to an after hours auto-dialer alarm caused by low lime feed rate. The lime feed rate alarm was caused by the after hours mine pool pump activation.

02-27-18 Operators performed the monthly full load emergency generator run test. The emergency generator operated all CTP components for one hour as programmed with no issues or errors to report.
Operators refueled the emergency generator with approximately 350 gallons of fuel. Fuel usage was attributed to the seventeen hour run time during the Avista power outage 02-17-18.

02-28-18 Performed monthly reset of the KT and treated outfall flow meters. Documented monthly totals on the KT & 006 flow page of this report.

- The Kellogg Tunnel discharge flow increased by 13% from February 2017, from 53.6 mg to 61.02mg.

- The Kellogg Tunnel zinc concentration increased by 41% from February 2017, from an average of 50 mg/L to 85 mg/L.

- The CTP operating pH set point was increased from 8.3 to 8.5 during this reporting period.

- The flocculent dosage was increased from approximately 1.4 PPM to 2.0 PPM during lined storage pond pumping events.

- The CTP sludge recycle rate remained at 400 gpm.

- CTP operators received three off-shift auto dialer call-out alarms caused by electrical outages and mine pool pump activations.

- CTP operators performed five pumping events from the Lined Storage Pond.

- CTP operators verified Aeration Basin pH probe and grab sample values twice per day.

Lessons Learned:
- CTP operators learned that the Avista power supply voltage may be inconsistent and the site generator will need to be utilized.

Lessons Learned

MONITORING PERIOD					
YEAR	MO	DAY	YEAR	MO	DAY
2018	2	1	2018	2	28

PARAMETER		Quantity or Loading			Quality or Concentration					
		MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	MINIMUM	MONTHLY AVERAGE	DAILY MAXIMUM	UNITS	FREQUENCY OF ANALYSIS	SAMPLE TYPE
pH	Sample Measurement				6.60		7.20		Continuous	Meter
	Permit Required				6.0		10.0			
Flow Thru Treatment Plant	Sample Measurement	2.19	2.97	mgd						
	Permit Required		Daily							
Lead Total - Pb Effluent	Sample Measurement	0.05	0.06	lbs/day		0.003	0.003	mg/L	three samples/ week	Comp 24
	Permit Required	14.8	37.0			0.30	0.60	mg/L		
Zinc Total - Zn Effluent	Sample Measurement	5.22	11.57	lbs/day		0.29	0.47	mg/L	three samples/ week	Comp 24
	Permit Required	36.2	91.3			0.73	1.48	mg/L		
Cadmium - Cd Effluent	Sample Measurement	0.02	0.091	lbs/day		0.001	0.004	mg/L	three samples/ week	Comp 24
	Permit Required	2.40	6.10			0.050	0.100	mg/L		
Manganese - Mn Effluent	Sample Measurement	432	769	lbs/day		23.4	36.0	mg/L	three samples/ week	Comp 24
	No Permit Required					N/A	N/A	mg/L		
Total Suspended Solids - TSS	Sample Measurement	16.0	30	lbs/day		0.9	1.4	mg/L	three samples/ week	Comp 24
	Permit Required	985	1907			20	30	mg/L		

PREPARED BY: GARY FULTON

REVIEWED BY: BRIAN JOHNSON

NPDES DISCHARGE POINT 006
CENTRAL TREATMENT PLANT
MONTH: Feb-18

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	FLOW	TSS		LOADING
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1		0.009		0.01		0.01		769		2.56		29.9	13.6
2	0.0026	0.055	0.281	5.93	0.00040	0.01	36.0	760	7.20	2.53	1.4	29.6	13.4
3		0.034		3.71		0.01		475		1.58		18.5	8.37
4		0.035		3.77		0.01		483		1.61		18.8	8.51
5	0.0026	0.026	0.434	4.34	0.00040	0.00	30.6	306	7.20	1.20	1.2	12.0	5.44
6		0.063		10.50		0.01		741		2.90		29.0	13.2
7	0.0026	0.041	0.460	7.32	0.0020	0.03	23.8	379	7.00	1.91	1.0	15.9	7.22
8		0.039		6.99		0.03		361		1.82		15.2	6.89
9	0.0026	0.049	0.467	8.78	0.0014	0.03	15.6	293	7.10	2.25	0.4	7.52	3.41
10		0.064		11.6		0.03		387		2.97		9.91	4.50
11		0.062		11.1		0.03		370		2.85		9.50	4.31
12	0.0026	0.056	0.218	4.73	0.00040	0.01	20.7	449	6.90	2.60	0.6	13.0	5.90
13		0.060		5.02		0.01		477		2.76		13.8	6.27
14	0.0026	0.058	0.215	4.77	0.00040	0.01	26.0	577	6.80	2.66	0.6	13.3	6.04
15		0.057		4.75		0.01		575		2.65		13.3	6.02
16	0.0026	0.057	0.183	4.03	0.00040	0.01	25.6	564	6.80	2.64	0.8	17.6	7.99
17		0.050		3.51		0.01		491		2.30		15.4	6.96
18		0.032		2.26		0.00		316		1.48		9.89	4.48
19	0.0026	0.025	0.254	2.47	0.00040	0.00	23.8	231	6.60	1.16	1.2	11.7	5.29
20		0.042		4.11		0.01		385		1.94		19.4	8.81
21	0.0026	0.054	0.248	5.11	0.0044	0.09	14.4	297	6.80	2.47	1.4	28.9	13.1
22		0.028		2.71		0.05		157		1.31		15.3	6.94
23	0.0026	0.034	0.272	3.59	0.00040	0.01	17.5	231	7.00	1.58	0.4	5.3	2.39
24		0.048		5.04		0.01		324		2.22		7.4	3.4
25		0.054		5.67		0.01		365		2.50		8.3	3.8
26	0.0026	0.051	0.262	5.09	0.00040	0.01	21.7	422	6.90	2.33	1.0	19.4	8.82
27		0.049		4.92		0.01		407		2.25		18.8	8.52
28	0.0026	0.053	0.220	4.45	0.00040	0.01	25.3	512	6.90	2.43	1.0	20.2	9.18
Total	0.031	1.286	3.514	146.264	0.011	0.448	281.000	12105.6	83.200	61.5	11.000	446.799	202.630
Sample Events	12	28	12	28	12	28	12	28	12	28	12	28	28
Daily Average	0.003	0.046	0.293	5.22	0.001	0.016	23.4	432	6.93	2.19	0.92	16.0	7.24
Lab Detection Limit	**0.0026**		**0.002**		**0.0004**		**0.0025**		**0.01**		**0.080**		

MIN	0.003	0.009	0.183	0.009	0.000	0.004	14.400	157.420	6.600	1.164	0.400	5.274	2.392
MAX	0.003	0.064	0.467	11.574	0.004	0.091	36.000	769.075	7.200	2.970	1.400	29.908	13.564

Notes:
(X mg/L) * (1 kg/10^6 mg) * (2.205 lbs/kg) * (3.785 L/gal) * (10^6 gal/Mgal) * (Y Mgal/day) = (X) * (Y) * (8.345) in lbs/day
(X lbs/day) * (1 kg/2.205 lbs) = (X) / (2.205) in kg/day

verified by Brian Johnson, 03/19/18

KELLOGG TUNNEL DISCHARGE
CENTRAL TREATMENT PLANT
MONTH: Feb-18
Data from SVL

DAY	LEAD (Pb)		ZINC (Zn)		CADMIUM (Cd)		MANGANESE (Mn)		pH	006 FLOW	TSS		
	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day	mg/L	lbs/day		mgd	mg/L	lbs/day	kg/day
1	0.668	14.27	58.3	1,245	0.0756	1.62	108	2,307	3.40	2.56	84.0	1,795	814
2		14.10		1,231		1.60		2,280		2.53		1,773	804
3		8.81		769		1.00		1,424		1.58		1,108	502
4		8.96		782		1.01		1,448		1.61		1,126	511
5	0.927	9.27	72.8	728	0.166	1.66	28.0	280	2.90	1.20	33.0	330	150
6		22.43		1,762		4.02		678		2.90		799	362
7		14.76		1,159		2.64		446		1.91		525	238
8	0.944	14.34	68.9	1,046	0.162	2.46	27.4	416	3.00	1.82	10.0	152	69
9		17.75		1,295		3.05		515		2.25		188	85
10		23.40		1,708		4.02		679		2.97		248	112
11		22.42		1,636		3.85		651		2.85		237	108
12	0.717	15.56	64.9	1,408	0.105	2.28	95.1	2,063	3.10	2.60	85.0	1,844	836
13		16.51		1,495		2.42		2,190		2.76		1,958	888
14		15.92		1,441		2.33		2,111		2.66		1,887	856
15	0.778	17.20	72.5	1,603	0.121	2.68	109	2,410	3.10	2.65	87.0	1,924	873
16		17.14		1,597		2.67		2,401		2.64		1,917	869
17		14.93		1,392		2.32		2,092		2.30		1,670	757
18		9.62		896		1.50		1,347		1.48		1,075	488
19	0.789	7.66	123	1,195	0.279	2.71	38.7	376	2.80	1.16	21.0	204	93
20		12.77		1,991		4.52		627		1.94		340	154
21		16.26		2,535		5.75		798		2.47		433	196
22	0.751	8.21	136	1,487	0.304	3.32	40.6	444	2.80	1.31	17.0	186	84
23		9.90		1,793		4.01		535		1.58		224	102
24		13.91		2,520		5.63		752		2.22		315	143
25		15.67		2,837		6.34		847		2.50		355	161
26	0.745	14.49	83.0	1,614	0.147	2.86	111	2,158	3.00	2.33	160	3,111	1,411
27		13.99		1,558		2.76		2,084		2.25		3,004	1,362
28		15.08		1,680		2.97		2,246		2.43		3,238	1,468
Total	6.32	405.32	679.40	42402.98	1.36	83.97	557.80	36606.82	24.10	61.45	497.00	31964.87	14496.54
Sample Events	8	28	8	28	8	28	8	28	8	28	8	28	28
Daily Average	0.790	14.5	84.9	1,514	0.170	3.00	69.7	1,307	3.01	2.19	62	1142	518

Notes:
(X mg/L) * (1 kg/10^6 mg) * (2.205 lbs/kg) * (3.785 L/gal) * (10^6 gal/Mgal) * (Y Mgal/day) = (X) * (Y) * (8.345) lbs/day
(X lbs/day) * (1 kg/2.205 lbs) = (X) / (2.205) kg/day

verified by Brian Johnson, 03/19/18

PTM Effluent at Lined Storage Pond **Month: Feb-18**
CENTRAL TREATMENT PLANT

DATE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L	pH s.u. CTP Lab	TSS mg/L
02/08/18	0.0162	12.1	1.16	7.30	0.4
02/22/18	0.0169	9.75	1.00	7.50	0.2

RINSATE AND TRIP BLANKS **Month: Feb-18**
CENTRAL TREATMENT PLANT

Rinsate and Trip Blank samples will be taken approximately every 20 QC events, or one each per month.

LOCATION Rinsate & Trip Blank	DATE	SAMPLE	LEAD mg/L	ZINC mg/L	CADMIUM mg/L
Kellogg tunnel Discharge		RB-02-05-18	<0.0075	<0.010	<0.002
Trip Blank (D.I.water)		TB-02-05-18	<0.0075	<0.010	<0.002

verified by Brian Johnson, 03/19/18

Bunker Hill Central Treatment Plant

Daily log February 2018

				AERATION BASIN					CLARIFIER						DISCHARGE 006								RECYCLE SG		LIME SLURRY			SLUDGE PUMP		POND PUMP		SLUDGE GUN TEST		LINED POND
		INFLUENT KT			a.m.		p.m.		a.m.		p.m.				a.m.		p.m.		DO	1/wk							Injection Valve	#3 600gpm						ESTIMATED
DATE	Operators	GPM	pH	SET	pH1	grab	pH1	grab	pH2	grab	pH2	grab	TURB	TEMP	pH3	grab	pH3	grab	PPM	TEMP	TURB	FLOW	SG	GPM	SG	%solid	Closed/Open	pump #	min	ON	OFF	10' Out	20' Out	Elevation (mg)
2/1	GF,GC	1708	3.04	8.3	8.3	8.3	8.3	8.3	7.9	7.9	7.8	7.9	2.00	51	7.3	7.3	7.3	7.3			2.35	2.56	1.054	400	1.071	11.0	262/35	3	60					2270.5 (1.8mg)
2/2	GF,GC			8.3	8.3	8.3	8.5	8.5	7.7	8.0	7.8	8.0	2.20	50	7.3	7.2	7.3	7.2			2.00	2.53	1.065	400	1.071	11.0	261/35	3	120			12"	9"	2270.5
2/3	GC			**8.5**	8.5	8.5	8.5	8.5	7.7	7.9	7.7	7.8	2.32	49	7.0	7.3	7.2	7.3			2.37	1.58	1.037	400	1.070	10.8	287/20	3	90	#3 07:00	13:30			2271.0 (2.25mg)
2/4	SB			**8.5**	8.5	8.5	8.5	8.5	7.7	7.9	7.7	8.0	2.00	46	7.2	7.3	7.2	7.3			2.10	1.61	1.030	400	1.068	10.5	290/20	3	0					2270.5 (1.8mg)
2/5	GF,SB	924	2.59	**8.5**	8.4	8.4	8.5	8.4	7.7	7.8	7.7	7.8	1.55	47	7.1	7.2	7.2	7.2			1.53	1.20	1.038	400	1.068	10.5	261/20	3	60	#3 05:40	13:00			2270.5
2/6	SB,GC, GF			8.4	8.4	8.4	8.4	8.4	8.0	7.9	8.1	7.9	1.16	49	7.3	7.1	7.2	7.2			1.08	2.90	1.050	400	1.067	10.4	216/35	3	90					2269.5 (1.25mg)
2/7	GF,SB,GC			**8.5**	8.4	8.3	8.7	8.5	8.0	7.8	8.0	7.7	1.50	48	7.3	7.1	7.2	7.1	10.34	6.3c	1.22	1.91	1.037	400	1.068	10.5	270/20	3	60	#3 04:35	13:00			2269.5
2/8	GF,SB,GC	950	2.60	**8.5**	8.5	8.4	8.6	8.6	8.0	7.8	8.0	7.9	0.80	42	7.2	7.0	7.2	7.1			0.72	1.82	1.033	400	1.068	10.5	228/20	3	0					2269.0 (1.0 mg)
2/9	GF, GC			8.4	8.4	8.5	8.5	8.5	8.1	7.8	8.2	7.8	0.60	51	7.2	7.1	7.2	7.2			0.70	2.25	1.059	400	1.068	10.5	172/35	3	120					2269.0
2/10	GC			8.4	8.4	8.4	8.4	8.5	8.2	7.9	8.2	7.9	0.70	42	7.2	7.3	7.3	7.3			0.63	2.97	1.057	400	1.067	10.4	183/35	3	90					2269.5 (1.25mg)
2/11	SB			8.4	8.4	8.5	8.4	8.5	8.2	8.0	8.2	8.2	0.89	41	7.2	7.2	7.3	7.2			0.81	2.85	1.049	400	1.066	10.2	181/35	3	105					2269.5
2/12	GF,SB			8.4	8.4	8.4	8.4	8.4	8.0	7.9	8.1	7.9	0.95	40	7.2	7.0	7.2	7.1			0.95	2.60	1.048	400	1.066	10.2	161/25	3	80					2269.5
2/13	GF,SB,GC			8.4	8.4	8.5	8.4	8.5	8.0	7.9	8.1	7.9	0.80	49	7.2	7.3	7.2	7.3			0.91	2.76	1.055	400	1.066	10.2	159/35	3	95					2269.5
2/14	SB,GC			8.4	8.4	8.5	8.4	8.5	8.0	8.1	8.3	7.9	1.08	42	7.3	7.1	7.4	7.2	10.10	6.5c	0.78	2.66	1.060	400	1.066	10.2	154/35	3	120					2269.5
2/15	SB,GC	1833	2.66	8.4	8.4	8.5	8.4	8.4	8.3	7.9	8.2	7.8	0.80	46	7.3	7.2	7.4	7.2			0.86	2.65	1.060	400	1.067	10.4	148/35	3	135					2269.5
2/16	GC			8.4	8.4	8.4	8.5	8.5	8.0	7.9	8.1	7.9	1.05	46	7.3	7.3	7.3	7.3			0.90	2.64	1.057	400	1.066	10.2	155/35	3	120					2269.5
2/17	GC			8.4	8.4	8.4	8.4	8.5	8.1	7.9	8.3	8.0	0.70	45	7.2	7.3	7.3	7.3			0.71	2.30	1.052	400	1.066	10.2	150/35	3	120					2269.5
2/18	SB			**8.5**	8.5	8.5	8.6	8.6	8.1	8.0	8.2	8.0	1.04	44	7.2	7.0	7.2	7.1			0.86	1.48	1.035	400	1.067	10.4	196/25	3	30					2270.0 (1.5mg)
2/19	SB	708	2.53	**8.5**	8.5	8.5	8.6	8.5	8.1	7.9	8.0	7.9	0.77	25	7.2	7.1	7.2	7.1			0.62	1.16	1.040	400	1.066	10.2	213/25	3	60					2270.0
2/20	SB,GC			8.4	8.5	8.6	8.4	8.3	8.1	7.9	8.2	7.8	0.67	34	7.2	7.1	7.3	7.2			0.57	1.94	1.059	400	1.067	10.4	160/35	3	135					2270.0
2/21	SB,GC			8.4	8.4	8.4	8.5	8.5	8.0	7.9	8.1	7.9	0.84	35	7.3	7.2	7.3	7.2	10.22	7.5c	0.61	2.47	1.058	400	1.068	10.5	153/35	3	120					2271.0 (2.25mg)
2/22	SB,GC	694	2.47	**8.5**	8.5	8.5	8.6	8.5	8.0	7.9	8.2	7.9	0.72	42	7.2	7.3	7.3	7.3			0.52	1.31	1.036	400	1.066	10.2	210/25	3	60	#3 06:15	13:00			2271.0
2/23	GC			**8.5**	8.5	8.5	8.5	8.5	8.1	7.9	8.2	7.9	0.72	37	7.3	7.3	7.3	7.3			0.64	1.58	1.037	400	1.067	10.4	230/25	3	60	#3 08:20	13:00			2270.0 (1.5mg)
2/24	GC			8.4	8.5	8.5	8.4	8.4	8.1	7.9	8.1	7.9	0.62	35	7.3	7.2	7.3	7.3			0.58	2.22	1.058	400	1.070	10.8	150/35	3	120					2269.5 (1.25mg)
2/25	SB			8.4	8.4	8.5	8.4	8.4	8.0	7.9	8.1	8.0	0.59	42	7.3	7.1	7.3	7.1			0.48	2.50	1.051	400	1.068	10.5	159/35	3	120					2269.5
2/26	GF,SB	1730	2.58	8.4	8.4	8.4	8.5	8.5	8.1	7.9	7.9	7.9	0.75	44	7.3	7.2	7.2	7.2			0.60	2.33	1.057	400	1.068	10.5	151/35	3	120					2269.5
2/27	GF,SB,GC			8.4	8.4	8.4	8.4	8.5	8.0	7.9	8.1	7.9	0.71	35	7.2	7.3	7.2	7.2			0.87	2.25	1.050	400	1.068	10.5	156/35	3	120					2269.5
2/28	GF,SB,GC			8.4	8.4	8.4	8.4	8.4	7.9	7.9	7.9	8.0	0.90	44	7.2	7.1	7.2	7.1			0.90	2.43	1.053	400	1.067	10.4	149/35	3	120					2269.5 (1.25mg)
																		1/wk	1/wk															
Averages:				8.43	8.43	8.44	8.46	8.45	7.99	7.90	8.05	7.90	**1.05**	42.9	7.22	7.19	7.26	7.20	PPM	*c	1.00	2.19	1.05						90					
Notes:																													2530					
																													1,518,000	Gallons				

02-02-18 12:30 KT flow decreased from 1708 gpm to approximately 622 gpm. Ph set point was increased from 8.3 to 8.5.

02-03-18 07:00-13:30 Diverted KT low flow of approximately 600 gpm to lined pond and activated #3 lined pond pump. Increased floc pump from 1.5 to 2.5.

02-05-18 05:40-13:00 Diverted KT low flow of approximately 600 gpm to lined pond and activated #3 lined pond pump. Increased floc pump from 1.5 to 2.5.

02-05-18 KT flow is assumed to be gravity flow only. KT flow increased from approximately 600 gpm to approximately 924 gpm during the past twenty four hours. Attributed to heavy rain and snow melt.

02-05-18 13:30 KT flow increased from approximately 920 gpm to 1900 gpm as the mine pool pump was activated.

02-06-18 10:00 KT flow increased from approximately 2020 gpm to approximately 2200 gpm.

02-06-18 14:00 KT flow decreased from approximately 2200 gpm to approximately 900 gpm as requested for main line pigging.

02-07-18 04:35-13:00 Diverted KT low flow of approximately 950 gpm to lined pond and activated #3 lined pond pump. Increased floc pump from 1.5 to 2.5.

02-08-18 15:00 KT flow increased from approximately 950 gpm to approximately 2100 gpm as the mine pool pump was activated. pH set point will remain at 8.40 as the KT flow is considered high at this time.

02-15-18 06:30 Recalibrated Aeration pH probe to grab sample 8.43 to 8.50

02-16-18 11:00 KT flow decreased from approximately 1950 gpm to 700 gpm. PH set point was increased from 8.4 to 8.5

02-16-18 17:30 KT flow increased from approximately 700 gpm to 1850 gpm. PH set point was lowered from 8.5 to 8.4

02-17-18 13:00 to 17:00 KT flow of approximately 1750 gpm diverted to lined storage pond during Avista power serge.

02-17-18 19:45 KT flow decreased form approximately 1750 gpm to 700 gpm.

02-19-18 13:30 KT flow increased from approximately 700 gpm to 1750 gpm.

02-21-18 11:00 KT flow decreased from approximately 1750 gpm to 700 gpm. PH set point was increased from 8.4 to 8.5

02-22-18 06:15 to 13:00 KT flow of approximately 650 gpm diverted to lined pond. #3 pump activated to lower accumulation. Floc setting increased from 1.5 to 2.5 during pumping event.

02-23-18 08:20 to 13:00 KT flow of approximately 650 gpm diverted to lined pond. #3 pump activated to lower accumulation. Floc setting increased from 1.5 to 2.5 during pumping event.

02-23-18 15:30 KT flow increased from approximately 650gpm to 1730 gpm. Ph set point was decreased from 8.5 to 8.4

02-26-18 12:00 KT flow decreased from approximately 1730 gpm to approximately 650 gpm. PH set point was increased from 8.4 to 8.5

02-26-18 16:00 KT flow increased from approximately 650gpm to 1730 gpm. Ph set point was decreased from 8.5 to 8.4

CENTRAL TREATMENT PLANT

MISCELLANEOUS FLOWS

Month : **Feb-18**

Date	**KT Flow Meter Reading**
3/31/2018	0
2/28/2018	59,644,830
Total	59,644,830

Date	**006 Flow Meter Reading**
3/31/2018	0
2/28/2018	61,451,600
Total	61,451,600

Lined Storage Pond Influent Flows

Sweeny Pump Station Reading

Date	#1 Pump	620 gpm	#2 Pump	500 gpm
3/31/2018	170.0	Hours	785.0	Hours
2/28/2018	170.0	Hours	785.0	Hours
Total Hours	0.0	Hours	0.0	Hours
Total Flow for 004/Sweeny For The Month =			0	Gallons

PTM Discharge Flow

Date	Flow (gpm)
02/08/18	15.0
02/22/18	15.0

Date	**Lined Storage Pond Water Level**			
3/31/2018	1,500,000	gal	Elev. =	2270.0
2/28/2018	1,250,000	gal	Elev. =	2269.5

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Old Mine Line Discharge Flow

Date	Flow (gpm)
NA	NA

2017-May 03 to 2018-May 02 BHCTP LIME USAGE AFW/WOOD

	Silo A						Silo B						Total	
Month	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Net Tons	Tons/Day
Jan 1 - Jan 31	11.70	13.30	-1.6	-8.6	72.20	63.6	16.30	16.30	0.0	0.0	0.00	0.0	63.6	2.05
Feb 1-Feb 28	13.30	15.50	-2.2	-11.9	40.50	28.6	16.30	13.80	2.5	13.5	42.10	55.6	84.2	3.01
				Silo A	**112.70**					**Silo B**	**42.10**		63.6	
					Tdl Tons Purchased	**154.80**							**Average**	**2.53**

NOTES:
08-22-17 Slaker B (Silo B) removed from service, Slake A (Silo A) placed into service - Six Month Rotation- Lime loop #2 off, Lime loop #1 on
Six Month Rotation - January 1, 2018 A= 11.7 B = 16.3
01-23-18 Lime loop #1 removed from service, lime loop #2 placed into service. #1 lime loop discharge pipe found leaking, will be replaced as
01-24-18 Lime loop #1 repaired and placed into service as the primary lime slurry injection system. Lime loop #2 was also repaired.
02-12-18 Slaker A (Silo A) removed from service, Slake B (Silo B) placed into service - Six Month Rotation- Lime loop #1 off, Lime loop #2 on
Six Month Rotation - February 11, 2018 A= 15.0 B = 16.3

2005	Average	2.59
2006	Average	3.23
2007	Average	2.76
2008	Average	4.78
2008 EXT.	Average	3.24
2009-2010	Average	2.16
2010-2011	Average	4.31
2011-2012	Average	3.93
2012 Ext	Average	2.70
2013-2014	Average	2.40
2014/Op #1 2/11/14-8/10/14	Average	3.33
14-15/Op #2 8/11/14-2/10/15	Average	1.91
2015 Op #3 2/11/15-8/10/15	Average	2.59
15-16 Op #4 8/11/15-2/10/16	Average	1.50
2016 Op #4 ext 2/11/16-8/10/16	Average	2.49
16-17 Ext 8/11/16-1/10/17	Average	1.68
Jan - May 2 1/11/17-05-02-17	Average	0.00
2017 5-03-17-12-31-1	Average	3.86

Lime Daily Use - 7 Days

	Silo A						Silo B						Total	
	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Initial Level	Final Level	Diff. (ft)	Diff. (tons)	Tons Added	Net Tons	Net Tons	Tons/Day
02/26-03/05	15.50	15.50	0.0	0.0	0.00	0.0	8.50	12.00	-3.5	-18.9	42.10	23.2	23.2	3.32

Lime Silo A Depth Readings

Date	Prior	After	Tons Received	Tons/ft
1/8/2018	9.9	14.4	33.70	7.49
1/29/2018	8.8	13.8	38.50	7.70
2/14/2018	9.4	15.0	40.50	7.23
1 Month Average:				**7.47**

Lime Silo B Depth Readings

Date	Prior	After	Tons Received	Tons/ft
2/26/2018	8.5	14.5	42.10	7.02
1 Month Average:				**7.02**

Flocculant Received

10/19/2017 2200 lbs
12/12/2017 4400 lbs
01-29-18 SA Orderd Flocc Estimated delivery March 15

LIME DEMAND TRACKING

Year	Month	Lime (tons)	KT flow (mg)	Lime Demand (g/L)	
2006	Jan.	70.2	56.0	0.30	
	Feb.	69.9	51.2	0.33	
	March	96.3	56.3	0.41	
	April	107.5	72.0	0.36	
	May	235.4	72.0	0.78	peak
	June	114.6	68.3	0.40	
	July	100.4	64.0	0.38	
	Aug.	118.2	64.1	0.44	
	Sept.	38.4	54.5	0.17	
	Oct.	69.5	57.6	0.29	
	Nov.	71.3	55.2	0.31	
	Dec.	78.2	60.5	0.31	
2007	Jan.	66.0	56.3	0.28	
	Feb.	51.8	50.5	0.25	
	March	81.7	65.4	0.30	
	April	127.9	66.6	0.46	
	May	154.0	63.2	0.58	peak
	June	94.1	57.9	0.39	
	July	107.0	58.3	0.44	
	Aug.	75.8	55.3	0.33	
	Sept.	77.2	50.5	0.37	
	Oct.	62.3	50.1	0.30	
	Nov.	56.9	50.8	0.27	
	Dec.	28.1	52.0	0.13	
2008	Jan.	60.7	53.4	0.27	
	Feb.	50.2	49.3	0.24	
	March	58.0	54.6	0.25	
	April	78.3	61.7	0.30	
	May	629.3	86.7	1.74	peak
	June	388.1	82.6	1.13	
	July	155.6	66.3	0.56	
	Aug.	129.5	65.2	0.48	
	Sept.	97.2	61.1	0.38	
	Oct.	76.4	58.7	0.31	
	Nov.	64.9	52.0	0.30	
	Dec.	73.0	55.7	0.31	
2009	Jan.	70.3	50.9	0.33	
	Feb.	60.3	48.2	0.30	
	March	62.1	61.7	0.24	
	April	88.0	63.1	0.33	
	May	180.9	70.2	0.62	peak
	June	146.3	64.6	0.54	
	July	104.4	61.6	0.41	
	Aug.	94.8	56.4	0.40	
	Sept.	89.2	57.0	0.38	
	Oct.	69.4	55.8	0.30	
	Nov.	70.9	55.0	0.31	
	Dec.	47.4	54.5	0.21	
2010	Jan.	66.7	55.5	0.29	
	Feb.	51.5	50.8	0.24	
	March	49.5	54.7	0.22	
	April	50.0	56.3	0.21	
	May	58.7	58.8	0.24	
	June	58.8	56.8	0.25	
	July	79.7	56.7	0.34	peak
	Aug.	54.7	56.2	0.23	
	Sept.	63.8	54.1	0.28	
	Oct.	54.6	55.4	0.24	
	Nov.	54.1	55.8	0.23	
	Dec.	64.5	54.6	0.28	
2011	Jan.	77.1	61.7	0.30	
	Feb.	69.8	54.6	0.31	
	March	94.7	61.4	0.37	
	April	119.6	65.6	0.44	
	May	433.0	84.4	1.23	peak
	June	328.4	80.0	0.98	
	July	159.9	79.3	0.48	
	Aug.	120.8	70.3	0.41	
	Sept.	92.4	60.4	0.37	
	Oct.	97.8	62.4	0.38	
	Nov.	66.8	58.4	0.27	
	Dec.	65.2	58.6	0.27	
2012	Jan.	74.9	58.4	0.31	
	Feb.	56.8	57.7	0.24	
	March	85.6	67.2	0.31	

LIME DEMAND TRACKING

Year	Month	Lime (tons)	KT flow (mg)	Lime Demand (g/L)	
	April	194.8	81.2	0.57	
	May	261.6	86.8	0.72	peak
	June	179.9	83.4	0.52	
	July	140.8	74.3	0.45	
	Aug.	118.0	68.9	0.41	
	Sept.	95.6	62.2	0.37	
	Oct.	89.0	60.0	0.36	
	Nov.	73.3	57.2	0.31	
	Dec.	74.8	61.8	0.29	
2013	Jan.	57.2	61.9	0.22	
	Feb.	64.5	59.4	0.26	
	March	71.7	66.2	0.26	
	April	96.9	69.6	0.33	
	May	126.2	71.5	0.42	peak
	June	94.1	64.6	0.35	
	July	91.2	62.8	0.35	
	Aug.	89.2	58.4	0.37	
	Sept.	65.2	58.0	0.27	
	Oct.	59.3	58.3	0.24	
	Nov.	50.9	56.2	0.22	
	Dec.	49.9	56.9	0.21	
2014	Jan.	38.7	57.4	0.16	
	Feb.	35.8	54.6	0.16	
	March	73.1	65.3	0.27	
	April	101.1	65.6	0.37	
	May	208.3	80.6	0.62	peak
	June	127.4	65.6	0.47	
	July	87.5	63.4	0.33	
	Aug.	81.1	61.5	0.32	
	Sept.	63.7	56.3	0.27	
	Oct.	53.1	60.6	0.21	
	Nov.	62.8	55.0	0.27	
	Dec.	54.6	59.7	0.22	
2015	Jan.	51.7	58.4	0.21	
	Feb.	61.0	59.7	0.24	
	March	83.1	64.4	0.31	
	April	94.8	63.0	0.36	peak
	May	73.3	62.0	0.28	
	June	69.7	65.3	0.26	
	July	83.6	55.6	0.36	
	Aug.	58.4	55.3	0.25	
	Sept.	55.3	53.9	0.25	
	Oct.	56.8	52.0	0.26	
	Nov.	46.3	49.8	0.22	
	Dec.	43.7	51.5	0.20	
2016	Jan.	24.2	52.2	0.11	
	Feb.	33.4	53.6	0.15	
	March	66.0	64.0	0.25	
	April	86.1	63.3	0.33	
	May	96.9	58.1	0.40	peak
	June	69.9	53.1	0.32	
	July	68.2	56.5	0.29	
	Aug.	53.7	53.2	0.24	
	Sept.	53.6	49.8	0.26	
	Oct.	49.8	52.4	0.23	
	Nov.	48.7	53.8	0.22	
	Dec.	48.3	52.0	0.22	
2017	Jan.	51.7	49.3	0.25	
	Feb.	46.9	53.7	0.21	
	March	140.0	59.0	0.57	
	April	174.5	61.9	0.68	
	May	246.6	84.2	0.70	peak
	June	143.5	73.1	0.47	
	July	141.6	69.4	0.49	
	Aug.	87.6	58.5	0.36	
	Sept.	100.8	67.4	0.36	
	Oct.	60.8	43.5	0.34	
	Nov.	91.0	72.4	0.30	
	Dec.	76.3	67.3	0.27	
2018	Jan.	63.6	56.5	0.27	
	Feb.	84.2	59.6	0.34	

KELLOGG TUNNEL ZINC DATA

Concentration (mg/L)

Month	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Jan.		86	81	79	63	70	61	72	57	68	41	46	50	53	53
Feb.		86	91	96	55	72	57	95	58	68	41	68	52	50	85
March		94	116	86	65	68	53	86	58	69	58	81	63	124	
April		98	121	140	85	80	50	137	176	86	107	92	115	238	
May		105	231	179	318	136	57	377	215	150	177	87	138	206	
June		107	182	118	271	143	68	347	164	106	131	78	108	145	
July		90	144	111	198	117	75	181	136	87	87	75	81	97	
Aug.		87	112	92	132	94	79	130	110	86	76	66	76	98	
Sept.		84	107	80	107	76	81	132	107	75	66	63	68	75	
Oct.	59	81	100	88	99	75	70	86	70	67	63	54	52	53	
Nov.	66	79	88	88	104	63	57	95	71	70	55	44	52	58	
Dec.	67	62	78	65	76	59	61	88	69	54	49	55	50	60	
average	**64**	**88**	**121**	**102**	**131**	**88**	**64**	**152**	**108**	**82**	**79**	**67**	**75**	**105**	
lime usage (tons/day)		**2.59**	**3.23**	**2.76**	**4.78**	**3.24**	**2.16**	**4.31**	**3.93**	**2.46**	**2.70**	**1.99**	**1.93**	**3.60**	
Zinc Conc. Increase/Decrease			**37%**	**-16%**	**29%**	**-33%**	**-27%**	**138%**	**-29%**	**-24%**	**-4%**	**-15%**	**12%**	**39%**	
Lime Usage Increase/Decrease			**25%**	**-15%**	**73%**	**-32%**	**-33%**	**100%**	**-9%**	**-37%**	**10%**	**-26%**	**-3%**	**87%**	

KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2000-2009

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Jan.	61,000,000	61,677,510	54,606,100	53,066,890	52,223,080	53,150,000	56,050,900	56,281,000	53,465,820	50,936,960
Feb.	57,600,000	45,584,000	52,840,000	46,493,470	48,306,920	49,860,000	51,188,000	50,511,300	49,282,209	48,146,111
March	60,730,000	57,740,360	50,452,060	60,162,290	59,852,720	58,073,000	56,332,830	65,443,650	54,578,130	61,712,540
April	68,680,000	54,846,000	65,583,230	63,335,350	50,715,310	53,775,350	72,039,280	66,636,500	61,690,530	63,055,350
May	**97,719,900**	57,501,901	76,082,410	63,335,350	53,245,000	54,181,650	72,027,000	63,203,308	86,680,760	70,233,580
June	69,800,000	55,835,590	67,299,960	59,532,434	50,451,170	51,750,000	68,385,600	57,981,410	82,622,590	64,623,180
July	63,698,850	53,652,330	64,820,120	66,252,746	56,538,980	55,255,000	64,054,000	58,282,900	66,324,500	61,535,000
Aug.	66,707,120	45,289,000	58,212,940	62,074,750	52,002,140	49,970,000	64,621,000	55,335,900	65,168,620	56,446,670
Sept.	55,797,530	50,276,020	60,140,460	43,789,000	49,208,020	49,987,000	54,515,270	50,471,870	61,074,020	57,006,430
Oct.	60,424,720	50,660,840	54,485,871	52,869,290	59,601,690	52,807,000	57,610,030	50,086,330	58,666,300	55,830,000
Nov.	53,408,660	50,660,840	51,072,259	47,600,000	51,948,000	50,722,600	55,191,700	50,779,040	52,041,780	54,956,800
Dec.	56,414,870	53,464,780	56,034,000	56,413,080	56,770,000	54,904,400	60,486,900	53,716,210	55,727,260	54,542,700
Totals	771,981,650	637,189,171	711,629,410	674,924,650	640,863,030	634,436,000	732,502,510	678,729,418	747,322,519	699,025,321

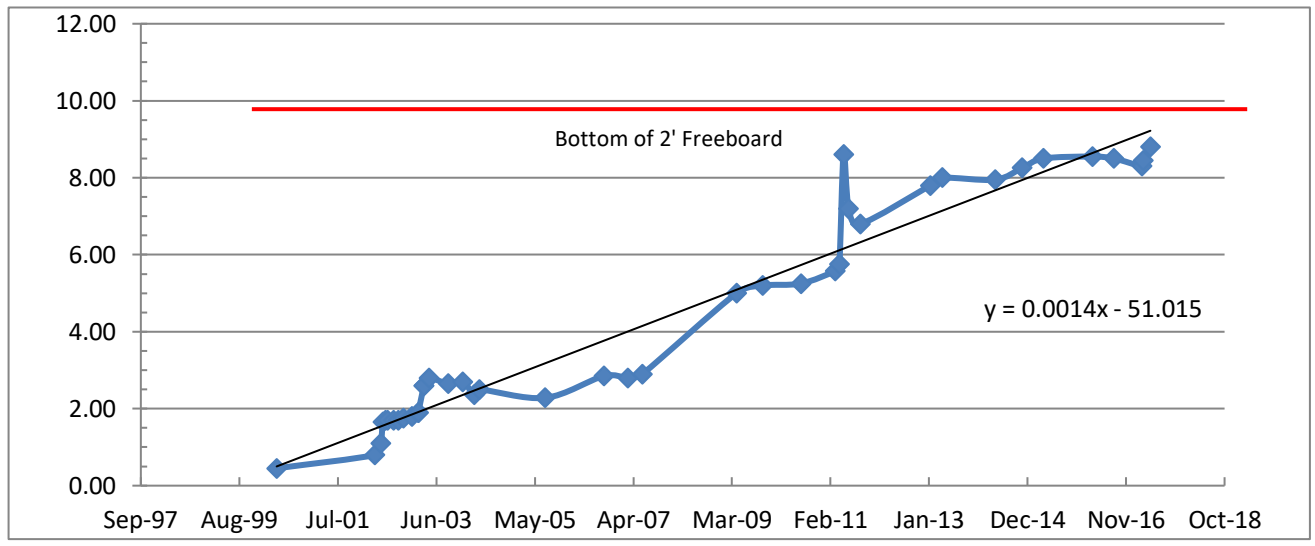
KELLOGG TUNNEL ANNUAL DISCHARGE FLOWS 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Jan.	55,503,180	61,797,170	58,434,610	**61,855,400**	57,478,450	58,440,540	52,196,750	49,352,650	56,555,500	
Feb.	50,819,910	54,556,227	57,763,170	59,383,290	54,607,950	**59,767,470**	53,694,400	53,675,440	59,644,830	
March	54,691,420	61,373,630	**67,236,650**	66,264,780	65,396,350	64,468,230	63,967,920	58,977,410		
April	56,255,340	65,687,340	**81,233,630**	69,619,100	65,618,770	63,056,840	63,323,620	61,947,620		
May	58,825,640	84,365,390	**86,826,340**	71,496,380	80,598,590	61,898,200	58,147,240	84,208,690		
June	56,770,200	79,985,540	**83,440,990**	64,663,900	65,623,330	56,368,540	53,149,810	73,144,700		
July	56,727,510	**79,346,330**	74,315,690	62,844,790	63,425,030	55,655,000	56,521,710	69,470,550		
Aug.	56,239,370	**70,377,570**	68,986,900	58,459,380	61,486,270	55,316,100	53,293,430	58,550,600		
Sept.	54,109,980	60,404,280	**62,270,300**	58,097,500	56,279,590	53,890,000	49,796,420	67,447,510		
Oct.	55,480,200	**62,403,480**	59,991,850	58,325,780	60,659,850	52,082,800	52,417,120	43,469,300		
Nov.	54,856,880	**58,430,700**	57,184,220	56,215,000	55,065,100	49,812,540	53,815,710	72,434,860		
Dec.	54,607,330	58,617,700	**61,750,390**	56,932,530	59,770,540	51,521,900	52,063,110	67,280,860		
Totals	664,886,960	797,345,357	**819,434,740**	**744,157,830**	**746,009,820**	**682,278,160**	**662,387,240**	**759,960,190**	**116,200,330**	**0**

Yellow indicates record monthly flow as well as record annual flow

Bunker Hill Sludge Pond
Sludge Staff Gauge Reading Summary

Date	Sludge Level (feet)	Estimated Sludge Elevation	Estimated Remaining Height to Road (feet)
05/19/00	0.45		
04/16/02	0.80		
05/28/02	1.10		
06/13/02	1.65		
07/01/02	1.70		
07/16/02	1.70		
08/27/02	1.70		
10/01/02	1.70		
11/06/02	1.75		
01/06/03	1.80		
02/19/03	1.90		
02/19/03	1.90		
03/31/03	2.60		
04/01/03	2.60		
05/07/03	2.80		
09/19/03	2.65		
01/01/04	2.70		
03/22/04	2.36		
04/29/04	2.50	2311	11.0
08/09/05	2.28	2310.8	11.2
09/30/06	2.85	2311.4	10.7
03/20/07	2.80	2311.3	10.7
6/30/2007	2.90	2311.4	10.6
4/30/2009	5.00	2313.5	8.50
10/31/2009	5.20	2313.7	8.30
7/31/2010	5.25	2313.8	8.25
3/31/2011	5.58	2314.1	7.92
4/30/2011	5.75	2314.3	7.75
5/30/2011	8.60	2317.1	4.90
7/5/2011	7.20	2315.7	6.30
9/26/2011	6.80	2315.3	6.70
2/4/2013	7.80	2316.3	5.70
4/30/2013	8.00	2316.5	5.50
5/12/2014	7.95	2316.5	5.55
11/20/2014	8.26	2316.8	5.24
4/20/2015	8.50	2317.0	5.00
4/1/2016	8.55	2317.1	4.95
9/1/2016	8.50	2317.0	5.00
3/20/2017	8.30	2316.8	5.20
3/28/2017	8.45	2317.0	5.05
5/18/2017	8.80	2317.3	4.70
7/31/2017	8.75	2317.3	4.75
11/15/2017	8.80	2317.3	4.70
3/1/2018	9.14	2317.6	4.36



6495	**8.69**	**Total Change, Days and Feet**
Note 3	0.49	Average Rise Per Year (Includes Lined Pond Cleanout), feet
	4.36	Estimated average remaining total height to perimeter road, feet
	2.0	Assumed desired end-of-life freeboard, feet
	2.4	Estimated available storage height, feet
	4.83	**Estimated Remaining Life (years)**
	12/28/2022	

Notes:

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: February 01, 2018 Inspected By: Gary Coast, Gary Fulton

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting Ok
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris & grass clippings were removed
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 2.46 mgd (1708 gpm), pH at this time is 3.04

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

No debris was removed from the mine discharge flume during this cleaning event.

A low flow request letter was submitted to the mine operator for February 7th AMD main line pigging.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: February 08, 2018 Inspected By: Steve Brunner, Gary Coast

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris was removed
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 1.36 mgd (950 gpm), pH at this time is 2.60.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

Operators removed no debris from the trash racks during this cleaning event.

Mine personnel stated the pump will remain off until this afternoon (Thursday Feb. 8th).

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: February 15, 2018 Inspected By: Gary Fulton, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	Wood debris was removed from both racks
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 2.64 mgd (1833 gpm), pH at this time is 2.66.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

Operators removed wood debris from the mine discharge flume during this cleaning event.

No discussions occurred with any mine personnel.

CTP Mine Water Line Open Channel Inspection Form

Note: This form should be utilized weekly during the regular channel cleanout.
Results will be include with the Daily Quality Control Report and monthly DMR.

Date: February 22, 2018 Inspected By: Gary Coast, Steve Brunner

Item Inspected	Condition	Comments
Channel Sections and Joints	**Good** / Poor	Check for cracks Ok
Channel Inlet Connection @ KT	**Good** / Poor	Check for cracks Ok
Channel Outlet/Pipeline Inlet	**Good** / Poor	Check for cracks Ok
Channel Bottom (during low flows)	**Good** / Poor	Concrete walls show signs of pitting/corrosion
Bottom Joints (during low flows)	**Good** / Poor	Ok
Trash Rack Assembly Rail Units	**Good** / Poor	Check for corrosion and bolt tightness Ok
Trash Racks	**Good** / Poor	No debris ok
Parshall Flume	**Good** / Poor	Check fiberglass and joint connections Ok Flume staff gauge needs replaced

General Comments:

The Kellogg Tunnel flow at this time is 1.0 mgd (690 gpm), pH at this time is 2.47.

The concrete flume walls are beginning to deteriorate approximately 6" up from the flume bottom.

The submerged area of the concrete is pitting and is now approximately 1/2" indented.

Alternate hand held staff gauge was used to verify flume staff gauge and flow meter readings.

Ultrasonic flow meter calibration was correct, no adjustments were needed.

Operators removed wood debris from the trash racks during this cleaning event.

No discussions occurred with any of the mine personnel.